What is claimed is:

1. A variable displacement swash plate type compressor used in connection with an external drive source comprising:

a housing in which a cylinder bore, a crank chamber, a suction chamber and a discharge chamber are defined;

a first bearing accommodated on a front side of the housing, the first bearing receiving radial force and thrust force;

a drive shaft supported by the first bearing in the housing rotatably;

a lug plate fixed to the drive shaft in the crank chamber;

a swash plate supported by the drive shaft in the crank chamber rotatably;

a single-head piston accommodated in the cylinder bore reciprocably and connected to the swash plate so as to reciprocate in accordance with the rotation of the swash plate;

a control mechanism communicating with the crank chamber, the suction chamber and the discharge chamber for controlling pressure in the crank chamber; and

urging means placed between the first bearing and the lug plate having urging force for reducing thrust force applied to the first thrust bearing.

2. The variable displacement swash plate type compressor according to

claim 1, wherein the drive shaft is urged by a force based on the pressure in the crank chamber, the urging force being larger than a maximum value of the force based on the pressure in the crank chamber.

3. The variable displacement swash plate type compressor according to claim 1, wherein the first bearing is a tapered roller bearing.

4. The variable displacement swash plate type compressor according to claim 1, wherein the first bearing has a race that is integrally rotated with the drive shaft, the urging means being a coned disc spring that is placed between the race and the lug plate.

5. The variable displacement swash plate type compressor according to claim 4, wherein the race is an inner race, the first bearing further having an outer race and a plurality of rollers, the outer race being press-fitted into the housing, the rollers being interposed between the inner race and the outer race.

6. The variable displacement swash plate type compressor according to claim 1, wherein the first bearing has a radial bearing and a second thrust bearing.

7. The variable displacement swash plate type compressor according to

claim 6, wherein rolling diameter of the radial bearing is equal to that of the second thrust bearing.

8. The variable displacement swash plate type compressor according to claim 1, wherein the drive shaft is continuously driven while the external drive source drives.

9. The variable displacement swash plate type compressor according to claim 1, wherein the refrigerant gas is carbon dioxide.

10. A variable displacement swash plate type compressor used in connection with an external drive source comprising:

a housing in which a cylinder bore, a crank chamber, a suction chamber and a discharge chamber are defined, the housing having a front side and a rear side;

a first bearing accommodated on the front side of the housing, the first bearing receiving radial force and thrust force;

a second bearing accommodated on the rear side of the housing;

a drive shaft supported by the first bearing and the second bearing in the housing rotatably, the drive shaft having a front end which protrudes from the housing and being driven by the external drive source;

a lug plate fixed to the drive shaft in the crank chamber so as to integrally

rotate with the drive shaft;

a first thrust bearing placed between the front side of the housing and the lug plate in the crank chamber;

a swash plate supported by the drive shaft in the crank chamber rotatably;

a hinge mechanism interposed between the lug plate and the swash plate, the hinge mechanism through which the swash plate is rotated synchronously with the drive shaft and inclines relative to the drive shaft;

a single-head piston accommodated in the cylinder bore reciprocably having a rear side, on which a compression chamber is defined in the cylinder bore, the piston being connected to the swash plate so as to reciprocate in accordance with the rotation of the swash plate;

a control mechanism communicating with the crank chamber, the suction chamber and the discharge chamber for controlling pressure in the crank chamber, the control mechanism by which an amount of refrigerant gas discharged from the compression chamber to the discharge chamber is varied in accordance with the reciprocation of the piston based on an inclination angle of the swash plate; and

urging means placed between the first bearing and the lug plate having urging force for reducing thrust force applied to the first thrust bearing.

11. The variable displacement swash plate type compressor according to

claim 10, wherein the drive shaft is urged from the rear side to the front side by a force based on the pressure in the crank chamber, the urging force being larger than a maximum value of the force based on the pressure in the crank chamber.

12. The variable displacement swash plate type compressor according to claim 10, wherein the first bearing is a tapered roller bearing.

13. The variable displacement swash plate type compressor according to claim 10, wherein the first bearing has a race that is integrally rotated with the drive shaft, the urging means being a coned disc spring that is placed between the race and the lug plate.

14. The variable displacement swash plate type compressor according to claim 13, wherein the race is an inner race, the first bearing further having an outer race and a plurality of rollers, the outer race being press-fitted into the housing, the rollers being interposed between the inner race and the outer race.

15. The variable displacement swash plate type compressor according to claim 10, wherein the first bearing has a radial bearing and a second thrust bearing.

16. The variable displacement swash plate type compressor according to

claim 15, wherein rolling diameter of the radial bearing is equal to that of the second thrust bearing.

17. The variable displacement swash plate type compressor according to claim 15, wherein rolling diameter of the second thrust bearing is smaller than that of the first thrust bearing.

18. The variable displacement swash plate type compressor according to claim 1, wherein the drive shaft is continuously driven while the external drive source drives.

19. The variable displacement swash plate type compressor according to claim 1, wherein the refrigerant gas is carbon dioxide.